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(54) **WIRELESS CHARGING ALIGNMENT SYSTEMS**

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(57) **ABSTRACT**

A system such as a vehicle may have control circuitry that controls a steering and propulsion system. The control circuitry may use the steering and propulsion system to park the vehicle in a parking space. Wireless power may be transferred from a wireless power transmitter in the parking space to a wireless power receiver coupled to a vehicle body in the vehicle. The control circuitry may use sensors to make sensor measurements during parking events. The control circuitry may also gather information on wireless power transfer efficiency. Historical vehicle-to-wireless-power-transmitter alignment information may be updated based on the sensor measurements and corresponding wireless power transfer efficiency measurements and may be used to park the vehicle in an optimal location during subsequent parking events. Vehicle parking position may be intentionally varied over a series of parking events to gather additional alignment information.